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Pillars, Columns, Posts.—T. Lees and F. L. Leach, 2730.

Pins and Needles.—W. Morgan-Brown (com.), 2758. A. R. and M. Allwood, 2805.

Pipes, Tubes and Syphons; Joining Pipes.—J. Atkins, 2546. E. J. M. Cetti, 2630. W. Crow, 2697. R. R. Carter, 2731. E. A. de Pass (com.), 2877.

Pistons, &c.—C. Baldwin, 2863.

Plants, Trees, Seaweeds, &c.—W. C. Taylor, 2861.

Plates, Dishes, Plate-racks.—J. H. Johnson (com.), 2663. H. B. Fox and W. H. Smith, 2867.

Ploughing, Digging, Clod Crushing, Land Rolling, Harrowing, Agricultural Implements, Tilling and Cultivating Land.—J. Garrood, 2520. A. Pollock, 2685. N. Henwood, 1716. P. Mitchell, 2885. J. Imray (com.), 2890.

Preserving and Preparing Articles of Food.—J. Ritchie, 2480. W. E. Gedge (com.), 2481. A. Hugentobler, 2699. J. J. Boyd, 2802. J. H. Payne and A. Campion, 2807. C. Perrot, 2897.

Presses; Compressing.—J. F. M. Pollock and J. W. Ivery, 2522. J. Wohl, 2584. J. Butler, 2678. A. Ripley, 2756. J. Bowing, 2884.

Printing and Transferring; Type and other Surfaces for Printing, Composing, and Distributing Type.—F. G. Myers, 2523. W. Marriott, 2574. J. Lewthwaite, 2632. J. Graddon, 2657. A. Liston, 2706. W. Willis, 2600. E. Dangoise, 2896.

Propelling Carriages.—W. E. Newton (com.), 2806. C. S. P. Wood, 2853.

Propelling Machinery, Transmitting Power and Motion, Converting Movements.—W. P. Thompson (com.), 2521. F. H. F. Engel (com.), 2614. J. Imray (com.), 2890.

Propelling Ships, Propellors, Paddle-wheels, and Screws.—Jane Cross, 2495. A. Blair, 2510. L. Somzee, 2585. H. J. Jackson, 2599. J. H. and T. W. Scott and J. Gilmour, 2611. E. E. Middleton, 2770. J. D. Grant, 2821. J. A. Barker (com.), 2847. E. Davies, 2848. A. M. Clark (com.) 2871.

Pumps, Pumping and Raising Water and other Liquids Pumps, Pistons, and Packing.—J. Hart, J. L. Simpson, and C. T. Colebrook, 2530. C. J. Ball, 2680. E. W. West and J. and T. Sturgeon, 2711. C. F. Amos and H. W. R. Smith, 2755. N. Seibert, 2831. W. E. Newton (com), 2839.

Punching or Perforating.—T. Nuttall, 2904.

Purses and Purse Fastenings.—T. Loebl, 2797. A. J. Fraser, 2833.

Railways, Permanent Way, Rail Joints, Chairs and Sleepers, Portable Railways, Atmospheric Railways, Switches, points, Crossings, and Turntables.—J. L. Haddan (com.), 2532. E. W. Stoney and G. K. Winter, 2549. T. M. Rammell, 5604. J. J. Halcombe, 2693. W. R. Lake (com.), 2730. B. J. B. Mills (com.), 2744.

Railways, Carriages, Coupling, Uncoupling, and Altering Position of Carriages and Engines.—E. C. Davies, 2537. R. Bovey, 2641. G. Andrews, 2661. W. Hamer, 2702. M. Higginson (com.), 2741. E. Rowlands, 2817. L. Dathis, 2853. C. S. P. Wood, 2870.

Reaping, Mowing, Making Hay, Gathering in Produce.—J. G. A. Walker, 2595. O. S. Gage Gage (com.), 2612. O. S. Gage (com.), 2679. A. Pollock. 2685. W. R. Lake (com.), 2723. H. J. H. King, 2740. M. M'I. Cranston and T. Calpin, 1815. W. P. Savage, 2859.

Refrigerating, Cooling Liquids, Making Ice.—R. K. Carter, 2731. A. Browne (com.), 2784. F. H. F. Engel (com.), 2558. D. Busby, 2779. T. Melling, 2780. J. Richardson, 2814. G. W. von Nawrocki (com.), 2818.

Rockets.—G. A. Faure and G. Trench, 2540.

Ropes, Cords, &c.—G. D. Davis, 2789.

Safes, Strong Rooms, Safety Vaults.—S. Chatwood, 2601.

Salt.—J. B. and G. H. Deakin, 2500. H. C. Ashlin and R. P. Asbridge, 2726.

Sewing and Embroidering.—F. B. Hitchman and J. C. Felton, 2471. E. Williams, 2485. J. Craig and R. Holliday, 2671. W. Morgan-Brown (com.), 2758. S. Pitt (com.), 2813. E. Hunt, 2856. C. Powers, G. Perkins, and C. Wilson, 2892.

Ship and Boatbuilding.—Sir J. L. Foulis, Bart., 2503. W. Clark (com.), 2504. C. R. Simey, 2512. C. M. Sombart (com.), 2531. H. R. Newton, 2547. W. Clark (com.), 2552. W. Bartley, 2560. L. Somzee, 2585. W. Chapman and S. Kimbel, 2592. J. L. Clark and J. Standfield, 2602. J. Atherton, 2648. G. Andrews, 2661. E. E. Middleton, 2770. M. Underwood, 2778. W. Price and J. E. Yerburgh, 2781. H. H. Drake and J. T. Fitzmaurice, 2788. H. A. Harvey, 2846. E. Davies, 2848.

Ships' Boats (Lowering, &c.)—A. M. Clark (com.), 2842.

Ships (Raising Sunken or Wrecked.—W. Chapman and S. Kimbel, 2592. H. F. Brion and J. Thompson, 2635.

Shirts, Collars, &c.—J. H. Johnson (com.), 2664. J. Hookway, 2710. W. Morgan-Brown (com.), 2803. W, Morgan-Brown (com.), 2804,

Shot, Shell, Bullets, &c.—T. J. Smith (com.), 2713. C. A. Faure and G. Trench, 2540. C. M. Sombart (com.), 2862. W. R. Davis, 2587.

Shuttles.—W. Menzies, 2684. S. Pitt (com.), 2813.

Sifting, Sorting, and Separating.—P. van Gelder, 2470. J. F. Stewart (com.), 2587. C. Hopkinson, 2743. A. Crabtree, 2775. G. W. von Nawrocki (com.), 2818. C. L. Wray, 2832. J. D. Jones, 2836.

Signals, Alarms, Communicating Apparatus, Conveying Sounds.—H. J. Lawson, 2492. W. Clark (com.), 2504. C. A. Faure and G. Trench, 2540. E. W. Stoney and G. K. Winter, 2549. M. Stobbs and H. Poole, 2688. W. R. Lake (com.), 2720. E. Rowlands, 2817. H. W. Hammond (com.), 2852.

Size, Glue, Gelatine, Isinglass.—F. B. Houghton, 2556.

Sizing and Preparing Yarns for Weaving.—J. Leach, 2798.

Skates, Skating Rinks.—W. R. Lake (com.), 2563.

Smoke (Preventing, Burning, and Condensing.—J. Smethurst, 2704.

Soap.—H. B. Gross, 2486.

Sowing Seeds and Distributing Manure.—N. Henwood, 2716.

Spindles; Spindles and Flyers.—A. Ogden, T. Marsh, J. Clayton, and A. Mills, 2607. C. Pieper (com.), 2696. B. J. B. Mills, (com.), 2769.

Spinning and Preparing for Spinning.—T. Craven, 2479. P. Smith and S Ambler, 2494. W. Riley, 2535. J. M'Glashan, 2557. H. Clayton, 2560. J. N. Yoncke, 2578. A. Ogden, T. Marsh, J. Clayton, and A. Mills, 2607. J. Hall, 2615. G. F. and W. Bell, 2616. G. Brook, J. Sykes, and J. Stake, 2628. J. Lewthwaite, 2632. T. Kaltenbach and J. H. Schuntz (com.), 2681. B. J. B. Mills (com.), 2769. J. M. Hetherington and S. Thornton, 2841. W. Kilpatrick, 2865. T. Coulthard, 2872. H. B. Barlow, 2874.

Springs.—H. Conradi (com.), 2603. H. J. Haddan (com.), 2625. J. Mitchell, 2665.

Stacking and Elevating Agricultural Produce. W. Brenton, 2687.

Stamps and Stamping, Seals, &c.—W. N. De la Rue, 2476. E. Dangoise, 2896.

Steam and other Boilers, Cleaning and Preventing Incrustation of Boilers, Water Feeding Apparatus for Boilers.—J. Smith, 2491. W. Morgan-Brown (com.), 2553. P. O'Connor, 2620. R. K. Carter, 2731.

Steam Engines (Stationary, Locomotive, and Marine.)—E. Genty and J. Deschamps, 2613. H. E. Newton (com.), 2646. M. P. W. Boulton, 2707. E. N. West and J. and T. Sturgeon, 2711. N. Clayton and J. Shuttleworth, 2712. N. Clayton and J. Shuttleworth, 2713. W. Logan and C. Coats, 2782. J. Richardson, 2814. N. Siebert, 2813. C. Burrall and R. Edwards, 2881. R. Waller, 2901.

Steering or Guiding Ships, Carriages, Ploughs, &c.—E. E. Middleton, 2770. L. Dathis, 2853. A. M. Clark (com.), 2871.

Stone and Slate, Artificial Stone and Marble Grindstones and Millstones.—R. G. How, 2499.

Sugar and Syrups, &c.—R. Bartlett, 2656. F. B. M'Crea and E. A. Cowper, 2829. C. Perrot, 2897.

Surgery, &c.—H. Conradi (com.), 2670. A. Maclure, 2705.

Tarpaulins, &c.—W. Brenton, 2687.

Telegraphs; Telegraph Printing Apparatus.—C. H. Siemens (com.), 2527. C. A. Bramar, 2554. G. E. Pritchett, 2816.

Testing Strength of Metals, &c.—E. J. M. Cetti, 2630.

Thermometers, Barometers, Pyrometers.—W. Clark (com.), 2504. E. J. M. Cetti, 2630.

Tobacco and Snuff, Cigars, Cigar-holders, Pipe and Cigar-lighters, Smoking-pipes, Tobacco-pouches.—W. R. Lake (com.), 2518. J. Cowman (com.), 2566. N. H. Holmes, 2634. J. Phillips, 2682. A. Liston, 2706. A. Pollet (com.), 2773. G. Castleden, 2844. A. Oldroyd, 2849.

Tools, Tool Holders.—J. Mitchell, 2665. J. C. Smith and G. G. Lusher, 2764.

Tooth-picks.—T. Reid (com.), 2550.

Torpedoes.—H. H. Drake and G. T. Fitzmaurice, 2788.

Toys.—A. P. Price (com.), 2570.

Tramways and Tramway Carriages, Tramway Locomotives.—J. Yates and E. Jagger, 2579. J. Gowans, 2606. J. P. Rawlings and E. J. Barnes, 2633. J. Gowans, 2638. G. Andrews, 2661. J. J. Halcombe, 2693. W. Mackison, 2767. W. E. Newton (com.), 2306. L. Dathis, 2853. C. S. P. Wood, 2870. W. Mackison, 2894.

Trimmings.—E. J. Earle (com.), 2838.

Umbrellas, Parasols, &c.—N. H. Holding, 2634. W. R. Lake (com.) 2767. J. C. Smith and G. Lusher, 2764. W. Davis, 2857.

Upholstery, &c.—J. Fisken, 2694.

Valves, Taps, Stop Cocks, Plugs; Regulating the Flow and Pressure of Fluids.—R. Meldrum, 2643. W. Foulis, 2683. W. Cowan, 2686. W. F. Tomlinson and G. B. Fearnley, 2700. N. Clayton and J. Shuttleworth, 2713. R. E. B. Crompton, 2721. W. Clark (com.), 2760. T. Melling, 2780. J. Demarest, 2823. J. Demarest, 2824. C. Baldwin, 2863. E. de Pass (com.) 2877.

Velocipedes, Bicycles.—H. J. Lawson, 2492. F. Gazey and A. J. Cattell, 2617. N. H. Holding, 2634. J. A. Lamplugh and G. F. Brown,

2751. E. C. F. Otto and J. Wallis, 2774. A. Lafargue, 2785. W. H. Bates, G. Bidlake, and H. Faulkner, 2791.

Ventilation; Supplying and Purifying Air for Buildings, Mines, Ships, Carriages, &c.—Sir J. L. Foulis, Bart., 2503. E. Casper, 2555. J. E. Carter, 2596. J. M'L. Dobson, 2677. J. Smethurst, 2704. C. Pieper (com.), 2737. W. P. Buchan, 2745. H. A. Dufrene (com.), 2746. C. Ching, 2753. J. Smith, 2808. G. Hancock, 2868.

Vices, Cramps, &c.—H. J. Lawson, 2492 J. Wohl, 2584. J. G. Rollins (com.), 2676.

Voting, Registering Votes, &c.—T. Lees and F. L. Leech, 2730.

Warping and Beaming Yarns and Threads.—J. Leach, 2798.

Washing, Cleansing, and Wringing Fabrics, Yarns, and Materials.—E. Dickinson, 2582. J. Lewthwaite, 2632. J. Fisker, 2694. T. Bradford, 2742. J. Leach, 2798.

Waterclosets, &c.—J. Demarest, 2723. J. Demarest, 2824.

Waterwheels and Engines, &c.—L. J. B st and N. J. Marshall, 2577. E. Genty and J. Deschamps, 2613 F. Wirth (com.), 2759.

Wearing Apparel for Gentlemen, Military Outfits, &c.—W. Clark (com.), 2551. T H. Watson and S. J. Woodhouse, 2576. M. J. Keiller, 2555.

Weaving, Braiding, Plaiting, Preparing for Weaving.—T. Brindle and J. Bradshaw, 2511. H. B. Barlow, 2524. W. Shorrock, 2621. T. Blezard, 2629. A. Kalisky, 2647. W. Morgan-Brown (com.), 2672. W. R. Lake (com.), 2725. 2725. J. Crabtree and J. Lister, 2748. N. Duxbury, 2786. J. Leach, 2798. C. Harloe, C. E. Liebrich and T. Hanson, 2825. G. Parker, 2828. L. Blazy, 2898. T. Nuttall, 2904. A. Lord, 2906.

Weighing Machines, Scales, Indicating Weight. —G. W. von Nawrocki (com.), 2818.

Wheels for Carriages, &c.—H. J. Lawson, 2492. J. Kitson, 2548. F. Gazey and A. J. Cattell, 2617. N. H. Kitson, 2727. J. B. Dunlop, 2777. W. H. Bates, G. Bidlake and H. Faulkner, 2791. E. de Pass (com.) 2843 W. O. Aves and T. Gilles, 2879. W. Arnold, 2891.

Wheels for Machinery.—H. J. Lawson, 2492. J. Imray (com.), 2890. W. Arnold, 2891.

Windows and Sashes.—R. Waycott, 2501. A. Page, 2593. S. Chatwood, 2601 B. Binks, 2622. W. Whittle, T. Greaves, and J. Newman, 2642. G. Andrews, 2661. G. F. Redfern (com.), 2855.

Wire-Working, Wire Ropes, Telegraph Cables.—C. Mollmann, 2659. G. Bedson, 2754. F. Wirth (com.), 2768.

Woods and Veneers, &c.—C. M. Jacob, 2484. E. de Pass (com.), 2561.

Yeast.—H. Love, 2507.

⁂ The above List is prepared from the Patent Records by Mr. T. Morgan, Secretary of the Inventors' Patentright Association, Limited.

EN AVANT.

Your face is constant in my dreams,
Your smile makes ever music there:
Where, the unfettered heart aspires,
Reflections of the sapphire beams!
From Heaven's throne those true eyes bear
Its light in all their passion's fires.

Shall I not see them near again
When our souls soar beyond our tears,
And heart claims heart thro' beating not;
Or will our parting be in vain?
And, far above the ethereal spheres,
The love we've dreamed be all forgot?

V. Gonville D.

"Lords and Commons" (a reprint of all speeches delivered by Members of both Houses of Parliament, in or out of Parliament, all the year round; also their public letters, without editorial or comments) is to be published on September 5th and every Thursday, post free, for 26s. the half year. On special occasions speeches and letters of others than Members will be inserted. It is to be printed at the new and extensive Automatic Type-setting Works at Crewe, the proprietor of which (Dr. Mackie, of the *Warrington Guardian* and other newspapers,) guarantees its proper production.

Reviews.

THE SUN.

"Diminished Light and Heat of the Sun the Cause of the Glacial Epoch, the Submergence, and Other Phenomena." By J. Scott Moore. Dublin; Hodges, Foster, and Figgis, Publishers to the University; London: Rivingtons, Waterloo-place. 1878.

This pamphlet treats of a subject of great scientific interest. The author's leading idea appears to be derived from the circumstance that (as stated by that eminent astronomer, Mr. Proctor), among the stars some have been known to burst out suddenly into a glow of light so brilliant as to become *stars of the first magnitude* (having been *previously invisible to the naked eye*); also, that two instances have occurred within the last few years, one in the constellation of the Northern Crown, the other in that of Cygnus.

Our sun, it appears, is a variable star, which it is not unreasonable to suppose is liable to the same phenomenon, and Mr. Moore puts forward the view that our earth has heretofore been subjected to the action of an enormous increase of heat, arising from the occurrence of a similar phenomenon in our sun. However, we will let Mr. Moore speak for himself:—

In the course of centuries (he says) the heat made its approaches gradually. Our voyagers to the Arctic Circle have discovered traces of tropical vegetation towards the North Pole, where now it could not flourish for a day. There has been no change in position of the poles of the earth whereby such a phenomenon could have been brought about. What was, then, the cause? The heat toward the poles must at one time have rivalled that now at the tropics, yet had not been intense enough to destroy vegetable life at the Antarctic. What, then, became of the animals of the world of the torrid zone? There is evidence that they deserted their native forests and hastened towards the cooling breezes of the north. The mammoth and elephant abandoned their natural climate, and flocked towards the cooler region of the Antarctic Circle, as a protection against the increasing heat. We have it on the authority of Sir Charles Lyell, that the "tusks and remains of those animals were so numerous in the north of Russia; as to exceed those of all living on the earth at that time." Had the northern regions then been in the same state as now, those animals could not have found food there for their support, nor would they have crowded into an inhospitable country, unless compelled to avoid a greater evil. Their escape, however, was only transient, they had to encounter another calamity as fearful and deadly as the heat. When the excess of glowing hydrogen, stimulating the sun, had become exhausted, the extra heat ceased to operate, and the more brilliant light ceased to glow upon the earth. An intense cold followed, so severe as to induce the glacial period, and destroy all life in the northern and southern regions of the earth. The animals of the torrid zone which had migrated from their native forests to avoid the unbearable heat, sought in vain to escape the cold which followed, but were caught in the masses of northern snow and ice, and there perished. Hence the innumerable quantities of tusks and teeth which excited the wonder and surprise of the great geologist. Few of the remains save the tusks and bones of those animals survived, but there was one whole skeleton preserved to us in a great block of ice, proving he had escaped destruction by the heat, so well preserved and perfect as to afford repasts for many years to the wolves and other wild animals of the country. That the final destruction of what remained of those animals from the heat, was compassed by cold, was thus confirmed to us. So great a change as the glacial epoch was not to pass away from us without leaving further traces of its devastating power. The crust of the earth, which had become greatly expanded by previous heat (such as that of Jupiter) now yielded to the antagonistic power, and became contracted by the cold, the expansion which had inflated the surface, removing its density, increasing its volume, and permitting the cold to penetrate to a great depth (as it had done in northern Russia) became compressed to the extent of 2000 feet; the result was, a great cataclysm ensued, the waters of the ocean invaded the submerged land, retaining possession of it for many thousand years, marking its encroachment by forming new sea beaches, and by leaving traces of sea shells and boulder stones on the mountain tops. Great Britain and Ireland became a series of disconnected islands, the parallel roads of Glenroy were left to excite the wonder and stimulate the researches of the future geologists of Scotland; icebergs were driven across the gelid ocean, great glaciers glided down from mountain and valley, bearing with them the tills, the boulder stones, and clays of other lands, and depositing them on the mountain tops and sides of distant countries. The glacial epoch having performed its duty, the heat of the sun once more fell upon the earth, the waters subsided, the land assumed its normal state, reserved perhaps for another and greater catastrophe.

Returning again to Proctor's dicta, "That small alterations in the sun's total emissions of light and heat take place very often, and in some cases periodically. We have no direct means of showing they have actually occurred periodically, the effect of previous calamities of the kind have always been obliterated by those succeeding; but if our diagram be correct—(this refers to a diagram which is appended to the work)—and if those catastrophes have been actually followed by periods of glaciality, we can ascertain the number and extent of those calamities by tracing their results through their glacial effects. You will see by the diagram that about ten such glaciations have occurred within the last three millions of years. Some, but trifling comparatively, lasting probably one thousand years, others to a more serious extent, continuing for three hundred and fifty thousand; yet in the eons of geological time what are a few thousands, or even thousands of years? The three millions of years shadowed forth in the diagram will not bring us back beyond the eocene.

The conclusion of the pamphlet shows definitively how the glacial epoch came about and the present state of the earth ensued.

Altogether this very brief dissertation on so interesting a subject is worthy of the perusal and consideration of every lover of science.

DR. EVERETT'S ELEMENTARY PHYSICS.

"Elementary Text-Book of Physics." By J. D. Everett, M.A., D.C.L., F.R.S.E., Professor of Natural Philosophy in the Queen's College, Belfast. London: Blackie and Son, 6, Paternoster-buildings.

This little work just meets the object aimed at by the author, and presents in a concise form portions of "Theoretical Physics which are most essential as a foundation for subsequent advances" which will be found in the more elaborate work, viz., Deschanel's "Natural Philosophy," translated by Professor Everett, and which has become a known text-book for students and others. It is systematically arranged, and embraces the whole of the Physical Sciences, and, in addition thereto, after each division, examples to be worked by the student are given, together with the answers to same.

We cordially recommend this book to those interested in the subject on which it treats.

ANSTED'S PHYSIOGRAPHY.

"Elements of Physiography." By Prof. D. T. Ansted, M.A., F.R.S. London: Allen and Co.

This book, which is intended for the use of science schools, is confined simply to terrestrial phenomena. After the Introduction, first the Land, with its distribution, receives attention; then Mountains and Valleys; the Ocean, Rivers, and Lakes occupy the next chapter; and then comes the Atmosphere. The five remaining chapters relate to the several phenomena observable in rock formations, and to the mutations to which the earth has been subject during the long lapse of geological ages. Although on the same subject as Prof. Huxley's volume, the one book has no resemblance to the other. There is much perspicuity in the descriptions given by Prof. Ansted; and altogether, as a brief treatise on a very interesting subject, these elements will serve a very useful purpose.

MACLAREN ON EVOLUTION.

"Some Chemical Difficulties in Evolution." By J. J. Maclaren, M.A. London: Bumpus.

This book, although it cannot be considered what the author seems to think it will be accepted as, namely, a "settler" for evolution, nevertheless presents some very cogent chemical objections to that theory.

A NOVEL DECORATIVE MATERIAL FOR WALLS.

"Linoleum Muralis," or "Sunbury Wall Decoration," is a new decorative material, invented by Mr. F. Walton, of Sunbury-on-Thames, likely to receive a considerable amount of attention from architects and others in search of a wall-covering which is capable of all the artistic effects obtainable in wood or leather at far less cost, and which may be legitimately and conscientiously employed, inasmuch as it is not a mere imitative substitute for a more costly material, but depends on its own intrinsic advantages, which cannot fail to receive recognition. It is more substantial than wood, inasmuch as it will not warp or cast, is impermeable to moisture, and is not liable to be attacked by worms; it can be washed or scrubbed with soap and water, and will stand any amount of ill-usage without showing a dent or scratch. It is easily fixed, and having a strong canvas lining can be as readily applied to a wooden framework as to a solid wall. For dados in dining-rooms, stair-cases, public buildings, and churches it can be used in any pattern the architect may choose to design, and in almost any tint, either alone or in combination with papers or hangings. The material absolutely prevents the passage of all damp arising from the walls, and is therefore especially suitable as a surface for the display of pictures and other art treasures, while the pleasant neat surface it affords gives a richness and refinement unattainable in any other substance of anything like the same cost. The sharp outline and perfect finish of some of the patterns we have seen almost forbid the idea that they have been executed in a plastic material, so close is the resemblance to carved work, and in our opinion the material is capable of employment for the execution of work in high relief to an extent of which the manufacturers themselves are at present probably hardly aware. Of its practical usefulness no one can entertain a doubt, and its capability of artistic application will, we are certain, insure for it the favour of architects and the art-world.

LARMUTH'S NON-INTOXICANT BEERS OR BEVERAGES.

At the members' meeting of the Inventors' institute on 27th June, 1878, F. H. Varley, Esq., Ch. Ex. C. I.I., presiding, (being the last of session 1877—78), Mr. Mantle read a paper on behalf of Mr. Larmuth on the subject of the latter gentleman's invention of non-intoxicating beers or beverages.

This paper commenced with the statement that for the first time a drink had been invented which had for its basis ingredients which are usually when used to produce potable liquors so treated as to be intoxicants, as, for instance, the transformation of barley into malt, which Mr. Larmuth so treats as to produce a non-intoxicating beverage. It had been admitted on all sides that alcoholic drinks are a great evil. It was a fact, however, that these drinks were popular all the world over—at all events wherever the Anglo-Saxon race was found. The temperance cause had now passed through certain stages, the latest development being the coffee palaces. The particular beverage which he (Mr. Mantle) had to bring under notice was an invention of Mr. T. H. Larmuth, who, after twelve months of patient experiments, had succeeded in producing a drink which met the objections commonly urged against all non-intoxicating beverages. The new drink, which was really a non-intoxicating beer, was brewed from hops and barley (not malt). The avoidance of malt obviated fermentation. The beer in question was ærated and then sweetened. It had been submitted to Dr. B. W. Richardson, who had highly praised it as a non-intoxicant. It was subsequently placed before the Committee of the Church of England Temperance Society, the result of which was that a company was formed from that body which patented Mr. Larmuth's invention. Since, then, however, further experiments had been made, and the beer had been greatly improved. Like other drinks, it improved by keeping. One great difficulty had been to make the drink bright and clear, presentable and palatable; but these qualities had now been secured. Its wholesomeness had been amply testified to by eminent physicans. Mr. Mantle concluded by referring to the specifications of patents which detailed the nature of the ingredients out of which the beer is manufactured, and from which it appeared that half-a-dozen different specimens, as well as numerous specialities, are brewed.

Before the discussion the beer was tasted by those present with a view of testing its qualities. The remarks which followed showed that some of the specimens were of a very satisfactory character, though others failed to meet with approval.

The Chairman, in proposing a vote of thanks to the reader of the paper, and to Mr. Larmuth, the inventor, remarked that although the inventor was worthy of great commendation for his philanthropic motives, and for the ingenuity with which he had dealt with a very difficult problem; yet as far as he was concerned he could not say that he was altogether satisfied that there were not some points of weakness in Mr. Larmuth's system, which it would be well for him to give attention to. For himself he could not say that the beverage he had tasted was equal to the beer commonly so called as produced by brewing in the ordinary way; furthermore he considered it would be open to the objection common to all non-alcoholic drinks, namely, that when kept for any length of time it would be liable to generate bacteria and living organisms. Probably, however, Mr. Larmuth might be able to overcome the objections he had referred to. Certainly he had great pleasure in proposing a vote of thanks to Mr. Mantle and Mr. Larmuth.

Mr. Campin, in seconding the vote of thanks, remarked that he had partaken of more than two glasses of the beverage, and he was bound to testify in its favour.

Several other gentlemen made similar remarks.

The vote of thanks was passed with acclamation.

And Mr. Mantle, in acknowledging the same, urged several cogent reasons in opposition to the remarks of the chairman.

A vote of thanks to the Chairman concluded the proceedings.

A NEW MICROPHONE.

In our esteemed contemporary, *Design and Work*, a correspondent under signature "Eltham," writes:—

Since the discovery of the microphone by Prof. Hughes, I have been making various experiments, resulting in the discovery of a microphone which does not depend upon electricity, but upon vibrations imparted to metals by sound. The instrument, of which I have made various forms, is very simple in its construction, consisting of a sounding-board, connected by a wire with the microphone or sound magnifier. This resembles the end of a Bell's telephone, with a brass spring projecting from it, connected with the diaphragm. The best way to make a sounding plate is to cut out a circular piece of tin, leaving a short arm projecting, which is screwed firmly down to a stand, leaving the remaining part free. This gives a louder sound than a piece of wood, which will answer for some purposes. With this microphone a fly can be heard walking over the sounding plate; and a piece of paper, or feather, placed gently on it is distinctly heard in the microphone end. A song sung, or words spoken, to the sounding plate, are also heard in the mouthpiece. Two of these microphones, which I suppose should be called telephones, connected by a brass wire (which must be allowed to vibrate), may be used as a telephone for a considerable distance. A song sung in one end is heard in the other with startling distinctness, resembling a musical instrument, especially if one end has a tinfoil diaphragm.

If one of these is hooked on to the string of a "toy" telephone, words spoken in any mouth-piece are heard in the other two.

There are two more facts worth mentioning. One is, that if one telephone end is held to the ear, and words, &c., spoken in the other, they are heard distinctly in the listening end. The second is, that should the wire touch any intermediate object whilst a song is being sung in the instrument, the pitch of the notes heard is altered and the harmony destroyed. I purposely refrain from describing the instrument fully at present, as I am making experiments with a view to improve it. I shall be glad, however, to give any further particulars required. I cannot compare my microphone with that of Prof. Hughes, not having as yet tried it.

An improved school desk, patented by Mr. J. P. Pies, of Spades, Ind., belongs to that class of desks which are so made as to be raised or lowered at will. The improvement consists in a new device by which the desk can be readily adjusted and firmly secured in the desired position.

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President, SIR ANTONIO BRADY.

SESSION 1877—1878

Is now Closed.

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F. W. CAMPIN, Sec.

Proceedings of the Institute.

EXECUTIVE COUNCIL.

At the Executive Council meeting held the 27th June, 1878, after the transaction of some general business, Mr. F. H. Varley, C.E., was re-elected (as Chairman of the Executive Council) to preside at its meetings in the absence of the President or a Vice-President. The position of the Patent Law Question was considered with reference to the progress of the Bill for Amending the Patent Laws introduced into the Commons' House by Messrs. Anderson, Mundella, Dalrymple, and Brown, M.P's., and it was left to the Secretary, Mr. F. W. Campin, to take action therein, and call the Executive Council together if any circumstances should arise rendering same desirable.

Monthly Notices.

The death of Mr. William Smith, C.E., has been recently announced. He was son of the inventor of the wire-rope, and for some years editor and proprietor of the *Artisan* magazine. He was well known in the Mechanical Section of the British Association, and in all proceedings in connection with mechanical engineering.

Dr. Prescott Joule, of Manchester, whose name is inseparably connected with the theory of the mechanical equivalent of heat, we are glad to learn, has been granted a Civil List pension of £200 per annum.

Fire Damp.—A point of considerable importance in studying the presence of hydrocarbons or fire-damp in mines has been brought before the Académie des Sciences by M. Coquillion. He finds that the gas escaping from the coal mixes very slowly with the air, when the atmosphere is still, and appears to form distinct zones.—*Athenæum.*

The Association Française pour l'Avancement des Sciences will be held this year in Paris, and in 1879 at Montpellier.

An important paper, "*Recherches sur la Réfraction Astronomique*," by M. Kowalski, Professor of Astronomy at the University of Kasan, in which the theories of refraction by Laplace, Ivory, Gylden, Lubbock, and Bauernfeind are discussed, and one proposed, founded on Ivory's, with the addition of a term depending on the dilatation of the air, on which tables are formed, and its results compared with those derived from the tables of Bessel and Gylden.

Edison's Heat Measurer.—An American journal informs us that Profs. Brackett and Young, of Princeton College, and Prof. Barker, of the University of Pennsylvania, recently visited Mr. Edison for the purpose of examining his instrument for measuring heat. With this new apparatus Mr. Edison succeeded in measuring the fifty-thousandth part of a degree of heat. This new instrument is to be used in measuring the heat of the heavenly bodies during the coming solar esclipse, which will be observed by Profs. Young and Brackett from Colorado.—*Athenæum.*

Silverthorne's "Transfer of Gas Works to Local Authorities" is about to be issued in an enlarged edition by Messrs. Crosby Lockwood and Co. This edition is intended to combine the latest statistics of the working of our chief towns where gas works are in the hands of corporations, with a criticism of the present London gas supply as administered by the present gas companies.

Rays of Oxygen by the Solar Spectrum have, by Prof. Draper, been identified to the number of no fewer than thirty of the best known rays.

Chemical Industry at the Paris Exhibition.—Dr. C. Diete complains of the admission of many small articles, which must certainly rank as chemical products, but which mark no advance in science, especially inks, blacking, and varnishes. In the French department there are about twenty exhibitors of blacking. Dr. Deite rejoices that the German Government refused to take part in the Exhibition, as a contrary conduct on their part would merely have tended *in majorem gloriam* of France. Next to the French department the English is most important in point of space, and as it—thanks to the political constellations—enjoys relatively the largest space for all objects exhibited it is the easiest to overlook. Nowhere do chemical preparations present themselves to the eye of the beholder with such elegance as in the English department. "The American display is unexpectedly unimportant. This agrees ill with the prophecies so often uttered by the enthusiasts of protective duties that the chemical industry of America would soon prove a serious competitor for us in Europe."—*Chemiker Zeitung.*

Prof. Veitch's "Discourse on Method."—Prof. Veitch, of Glasgow University, has in preparation a new edition of his translation of this famous work. The translation has already gone through four editions. Descartes's great treatise has never been so lucidly put before English readers as by means of Prof. Veitch's introductions and notes. The new edition will be prefaced by an introduction re-written throughout, and will be published by Messrs. Blackwood and Sons early in the autumn. —*Athenæum.*

The Scientific Review.

AUGUST, 1878.

THE TELEPHONE AND OUR PATENT LAWS.

We have frequently called the attention of our readers to the unsatisfactory position of British Inventors as regards the Government; another prominent exemplar of this is afforded by the case of Mr. W. Graham Bell and the Telephone, in regard to his relations therewith, to which our attention has been directed by a correspondent, who writes from N Malden, under the signature "Vested Rights," whose high position and reliable character makes his communication worthy of every attention. He subjoins copy of a letter from the *Standard*, which, he truly says should receive the most thoughtful consideration not only of Inventors, but of all who have any respect whatever for English fairness. The question is not merely one of the desirability or otherwise of protecting the rights of Inventors, but it is really a question of an attempted subversion by the Government—and that, too, a Conservative Government—of those important principles which constitute what we so proudly refer to as the rights of property. The letter alluded to is written by Mr. A. Graham Bell, whose name as the Inventor of the Telephone (in a practical form, whatever may have been done before him) will not soon be forgotten. He writes:—

"I hope you will be kind enough to give me space for a few lines on the subject of the Government Telegraph Bill which stands for second reading to-morrow night.

"This Bill, though not bearing a title that could lead any one to suppose its object, in reality seeks to give to the Government the absolute monopoly of the public use of my invention of the Telephone—an invention which been the result of many years of anxious study and thought, and on which large sums have been expended to perfect it.

"One of the reasons put forward by the Government in support of the Bill is that the monopoly granted to the Post Office by the Act of 1869 covers the Telephone.

"If this is so, what can be the use of further legislation? That the Government do not believe in such an argument is best evidenced by the fact that they are now seeking to extend the definition of the 1869 Act so as to make it embrace the Telephone beyond question.

"This is purely and simply *ex post facto* legislation, and, so ar as I have been able to learn, wholly without precedent in ither public or private Acts.

"I wish to point out that I am not asking the Government give me any new rights of any kind; I am quite content to t upon my rights as they are at the present moment. If the ment is sound that the Act of 1869 is sufficient for the ection of the Government, I must, of course, run the risk at.

But if, as I am advised by high legal authority, that Act not extend to the Telephone (and it is difficult to see how d, the invention not having been made for years after-, then my claim is surely founded on the commonest viz., that a new Act should not be passed to extinguish ts.

he Post Office were simply claiming to use my patent, ld be one thing, an I should know how to deal with would leave me also free to use it myself; but what they are seeking to do is not that, but to enlarge their monopoly so as to *exclude me from the public use of my invention altogether*.

"I trust I am not asking too much in requesting the favour of your ventilating the subject, and I submit that it is contrary to every principle of fair dealing to interfere with any one's rights by prohibitive legislation of an exceptional character, such as is now attempted."

Now, this statement indicates a proceeding by a Conservative Government which is not only Communistic, *but fraudulent*; for it shows that our legislators can entertain the idea (though it may be hoped that they will discover their error before they have actually inflicted the proposed injustice) of receiving money for a property, and then confiscating the property they have sold.

Even if we were to admit that the protection of Inventions is undesirable, and that the Patent Laws should be abolished, it does not justify the course taken. So long as the Patent Law exists, so long are Inventors entitled to hold and enjoy property of the kind which it creates; and if we admit that it is desirable to encourage Inventors by granting them patents, it is obviously absurd on the part of any Government to shake the confidence of the public in the honesty of the grant.

Everyone acquainted with Inventions knows that a machine not widely different from something which previously existed may be not only patentable but of enormous value to the community, although the prototype was comparatively useless; hence the law recognises both new applications and new means as equally patentable. To give an instance, I would remark that many of us recollect at country fairs the little old men about six inches or eight inches high, who opened their mouths to receive a nut each, these old fellows' lower jaws being (by a peculiar anatomical arrangement not generally observed during the student's course of hospital practice to qualify for the medical profession) connected with their coat tails in such a way that pressure on the coat tail closed the mouth and cracked the nut. This anatomical monstrosity was the prototype of Blake's stone breaker, one of the most important mechanical inventions of the past quarter of a century, which has made the fortunes of several Inventors and manufacturers, and enabled many processes to be made profitable which before could scarcely be carried on at all. But no one litigated Blake and Marsden's patent upon the ground that it was anticipated by our great grandfather's nutcracks.

What, then, shall we say to a Conservative Government which virtually adopts this course? The telephone and telephonic communication are as new and as distinct from electric telegraphy as was electric telegraphy from the previously used system of semaphoric telegraphy, and there can be no more justification for attempting to defraud the introducer of the improvement in the one case than in the other. It is, however, the principle of confiscation that is objected to, and more especially when that confiscation is proposed by a Conservative Government the very principle of which has hitherto been supposed to be the upholding of vested rights.

We have only to add that we fully endorse our correspondent's views. Also, that we understand that the Government Telegraph Bill contains other provisions utterly repugnant to our notions, whether of property or of freedom.

Proceedings of Societies.

ROYAL SOCIETY.

JUNE 6TH.—Sir J. Hooker, President, in the chair.—Annual Meeting for the election of Fellows. The following were elected: J. G. Baker, F. M. Balfour, Rev. T. G. Bonney, Prof. J. H. Cotterill, Sir W. Elliot, Rev. Canon W. Greenwell, T. Hawksley, J. Hopkinson, Dr. J. H. Jackson, Lord Lindsay, S. Roberts, E. A. Schäfer, Dr. H. Sprengel, G. J. Symons, and C. S. Tomes.

ROYAL INSTITUTION.

JUNE 3RD.—W. Bowman, Esq., F.R.S., in the chair.—Lord Viscount Kilcoursie, Mr. R. Faircloth, Dr. J. Lawrence-Hamilton, and Mr. W. F. Stanley were elected Members.

LINNEAN SOCIETY.

MAY 24TH. — Annual General Meeting.— Prof. Allman, President, in the chair.—In his anniversary address the President gave a *résumé* of the principal recent discoveries in the anatomy and development of the Polyzoa, and of the resulting important features in their systematic grouping. Much had been due to the labours of Busk and Nitsche. It was maintained that investigations were mainly in favour of the so-called "brown bodies" being merely the residuum of degraded and withered polypides, having no real morphological or physiological importance. He coincided with the views of Nitsche, Joliet, and Busk, that the supposed "colonial nervous system" is but an irregular plexus of cellular and protoplasmic cords and filaments derived from the walls of the zoœcium or polypide cell, and not a true nervous system. Joliet's idea of its being the origin of new polypide buds and of certain minute free corpuscles found in the zoœcium is, however, too exclusive. Cyphonantes is a singular little free swimming marine creature, of pyramidal shape, the soft body of which is contained within a bivalve shell. Schneider has regarded it as a larval Polyzoon, and announced the startling fact that, before its transformation into the adult, it becomes totally disorganised and reduced to a homogeneous protoplasmic mass, though previously its structure had been complex. Thereafter arises a new polypide, and the whole is metamorphosed into the adult form. Strange as this history may seem, it has been confirmed by the researches of Nitsche and Joliet. Finally, the question of "individuality," or relation of the polyzoal colony, was taken up, and the following opinion enunciated: That the zoœcium, or cell in which the polypide is lodged, must be regarded as having a zooidal individuality of its own, and that the two thus form a compound element, which becomes associated with similar ones in order to form the colony. This compound element is thus composed of two zooidal individuals, zoœcium and polypide; on the zoœcium devolving the functions of sexual and nonsexual reproduction, and on the polypide that of nutrition. The report on publications was read by the Secretary. The Treasurer's statement of accounts for the year 1877 showed a balance of £46 13s. remaining on hand, while £700 had been invested since the last annual report. The alterations in the bye-laws relative to an increase in the rate of payment for Fellows compounding, previously read at two successive general meetings, was confirmed by the Fellows at large, in terms of the charter. The Secretary gave a notice of the Fellows and Foreign Members who had died during the past twelvemonth; of the former there were ten, and of the latter four. Among those mentioned, Mr. H. Adams, Dr. E. Fries, Mr. A. Murray, Prof. Parlatore, Mr. Fox Talbot, Dr. R. Visiani, Dr. H. Weddell, and Mr. T. V. Wollaston deserve mention as of considerable repute in the scientific world. During the year thirty-eight ordinary Fellows and five Foreign Members had been elected. At this meeting the following gentlemen, Mr. J. Ball, Dr. F. Boycott, Mr. F. Du Cane Godman, Dr. A. Günther, and the Rev. G. Henslow, were elected into the Council in lieu of an equal number retiring by rotation. The President and officers were re-elected.

SOCIETY OF ENGINEERS.

JUNE 3RD. — Mr. R. P. Spice, President, in the chair.—A paper was read by Mr. St. George Lane Fox, "On the Lighting and Extinction of Gas by Means of Electricity."

ANTHROPOLOGICAL INSTITUTE.

MAY 28TH.—Major-General A. Lane Fox, V.P., in the chair.—Mr. Hyde Clark exhibited a carved stone object which was considered as having come from Central America. Colonel Paske read a paper "On Buddhism in Little Tibet." Colonel Paske gave an explanation of the modified form of Buddhism prevalent in the provinces of Little Tibet, and brought to notice the ritual and religious customs of the lamas or Buddhist monasteries; exhibiting specimens of Buddhist ritualistic instruments and other curiosities, with a small painting representing the "Triumph of Buddhism," executed by a lama. Mr. Brabrook read a paper by Mr. A. Simson, entitled. "Notes on the Piojés of the Putumayo." A tribe of Indians occupying the middle and lower Aguarico, and a considerable stretch of the left bank of the Napo, are known as the Santa-Maria Indians, or Piojés, from the word in their language "Piojé," and speak the same language and have several traits in common with the Indians inhabiting the borders of the upper Putumayo, who seem to have no special appellation, but which Mr. Simson proposed to call the Macaguajes, or Piojés of the Putumayo. Mr. Simson's experience of these Indians extended only to those living on the banks of the main stream, during long journeys with a number of them selected from different villages, and visits and sojourns in most of these villages. Their dwellings, religion, and customs were fully described. Mr. Simson also communicated a Vocabulary of the Zaparo Language.

SOCIETY OF BIBLICAL ARCHÆOLOGY.

JUNE 4TH.—C. T. Newton, Esq., C.B., in the chair.—The paper read was "On the Hieroglyphic or Picture Origin of the Characters of the Assyrian Syllabary," by the Rev. W. Houghton.

GEOLOGICAL SOCIETY.

JUNE 5TH.—J. Evans, Esq., in the chair. Messrs. W. S. Crimp and J. R. Haines were elected Fellows. The following communications were read: "On the Quartzites of Shropshire," by Mr. C. Callaway; "On the Affinities of the Mosasauridæ, Gervais, as exemplified in the Bony Structure of the Fore Fin," by Prof. Owen; "On new Species of Procolophon from the Cape Colony, preserved in Dr. Grierson's Museum, Thornhill, Dumfriesshire, with some remarks on the Affinities of the Genus," by Prof. H. G. Seeley; "On the Microscopic Structure of the Stromatoporidæ, and on Palæzoic Fossils Mineralised with Silicates, in illustration of Eozoon," by Principal Dawson; "On some Devonian Stromatoporidæ," by Mr. A. Champernowne; and "On a new Species of Loftusia from British Columbia," by Mr. G. M. M. Dawson.

ARCHÆOLOGICAL INSTITUTE.

JUNE 7TH. — G. T. Clark, Esq., in the chair.—A paper was sent by Mr. C. W. King, on an antique cameo, 2 inches by 1½ inch, representing a bear, lately found at South Shields. The author attributed this work to the early part of the third century, considering that it represented the black bear, which then roamed in North Britain, and not, as the colour of the cameo might seem to indicate, his white brother of the Arctic regions. This was the species of beast which the Romans took the trouble to transport to Italy for the sports in the arena, the brown beast of the Alps being a vegetarian, timid, and useless for such a purpose. It was the only instance of the kind known to Mr. King. The cameo had no doubt been used for fastening the military cloak, probably by some Gothic or Frankish "Ursus," in allusion to his name. Prof. B. Lewis thought it probable that the Romans were acquainted with the Polar bear, and quoted Juvenal in support of his opinion. Mr. O. Morgan exhibited a silver model, 17 inches high, of the first Eddystone Lighthouse, erected by Winstanley in 1696, and destroyed in the great storm of 1703, its builer perishing with it. The Rev. W. J. Loftie read a paper on Meydoum, the "false pyramid" of the Arabs." Mr. C. F. Penrose gave an account of the recent Roman discoveries at Lincoln. Mr. Morgan made some observations on the remains of an ancient vessel found near the mouth of the River Usk, and shown to be of Danzig oak. Mr. W. T. Watkin sent some notes on recent discoveries at Bath, South Shields, and Templeborough. Mr. E. James exhibited some old English plate, including a Norwich "cup and cover."

ZOOLOGICAL SOCIETY.

JUNE 4TH. — Prof. Flower, V.P., in the chair.—The Secretary read a Report on the additions to the Society's Menagerie during May. Mr. Sclater exhibited a young specimen of Temminck's Manis (*Manis Temmincki*), and read a note describing habits of this animal in captivity by Mr. F. Holmwood, Asst. Political Agent at Zanzibar. Mr. Sclater also called attention to the extraordinary mimicry of the true rectrices by the elongated upper tail coverts in *Ciconia maguari* and *C. episcopus* as observable in the living examples of these birds in the Society's Gardens. Mr. E. R. Alston exhibited, on behalf of Dr. Coues, two specimens of *Synaptomys Cooperi*. To these species, the type of Synaptomys, proposed in 1867 by Prof. Baird as a subgenus of Myodes, full generic rank had been accorded by Dr. Coues in 1874. The present specimens were, so far as was known, the first typical specimens sent to Europe. Prof. W. H. Flower exhibited the skull of a two-horned Rhinoceros from Tipperah, and read a note on the peculiarity of its structure. Papers were read: by Prof. Huxley on the Cray-fishes, in which he gave a review of the various generic divisions of this group of Podophthalmous Crustacea, and pointed out how remarkably these divisions corresponded with their geographical distribution; from Messrs. Godman, Salvin, and Druce, on the Lepidoptera collected by Mr. S. N. Walter in the Island of Billiton; by Messrs. Godman and Salvin on the butterflies collected in Eastern New Guinea and some neighbouring Islands by Dr. Comrie, during the voyage of H.M.S. Basilisk; by Mr. A. G. Butler, on a new species of the orthopterous genus Phylloptera from Madagascar, which he proposed to name *Phylloptera segonoides*; by Messrs. Sclater and Salvin, on the collection of Birds made during the voyage of H.M.S. Challenger; the present communication, forming the eleventh of the series, contained a description of the Steganopodes and of the Impennes; of the first group the collection contained thirty-three specimens belonging to eight species; of the second, thirty-seven specimens belonging to six species; and by Prof. E. Ray Lankester, on the structure of the hearts of Ceratodus, Protopterus, and Chimæra, with an account of certain undescribed pocket-valves in the conus arteriosus of Ceratodus and Protopterus.

CHEMICAL SOCIETY.

JUNE 6TH. — Dr. Gladstone, President, in the chair.—The following papers were read: "Analogies between the Action of the Copper-zinc Couple, and Occluded and Nascent Hydrogen," by Dr. Gladstone and Mr. Tribe. The authors have observed that finely divided copper charged with hydrogen converts nitre into potassium nitrite and ammonia, and reduces potassium chlorate to chloride. The copper-zinc couple converts nitrobenzol in aqueous solution into aniline, a reaction which the authors have utilised for the detection of small quantities of nitrobenzol. The actions of palladium-hydrogen, platinum-hydrogen, and carbon-hydrogen on various substances have been investigated and compared with the action of the copper-zinc couple. During the reading of the paper Dr. Russell took the chair. "On the Alkaloids of the Aconites," Part III., by Dr. Wright and Mr. A. P. Luff. The authors have continued their researches on these alkaloids, and in the present paper investigate the saponification, &c., of aconitin and picraconitin; they have obtained two new bases, aconin picranonin: acetyl and benzoyl derivatives of several of the bases have been formed. The authors draw an important practical conclusion from their work, that it is quite possible to obtain crystallised alkaloids of constant composition from *A. ferox* and *A. napellus* instead of the amorphous preparations which are now sold, and which often contain forty, and even ninety, per cent. of bases more or less inert. "On the Alkaloids of the Veratrums, Part I. Alkaloids of *Veratrum Sabadilla*," by Dr. Wright and Mr. Luff. After discussing the conflicting statements which have been made by previous observers, the authors give details of the process of extraction, which consisted in percolating the crushed seeds with alcoholic tartaric acid, evaporation and extraction by numerous and prolonged shakings with ether. Three alkaloids were obtained—veratrine, $C_{37}H_{53}NO_{11}$, which, on saponification, splits up into veratric acid and a new base, verin; cevadin, $C_{32}H_{49}NO_9$, splitting up, on saponification, into cevadic acid (methylcrotonic acid) and cevin; cevadillin, $C_{34}H_{53}NO_8$, which does not crystallize or form cystalline salts. "On the Action of Hydrochloric Acid upon Chemical Compounds," by Mr. J. W. Thomas. The author has examined the action in several ways of hydrochloric acid on many salts, nitrates, sulphates, tartrates, citrates, chromates, oxalates, &c. On the Action of Oxides on Salts," Part I., by Dr. Mills and Mr. Wilson. The object of the authors was to determine the law in consequence of which the action of oxides on salts leads in general to the formation of other oxides derived from the salts in question. They have studied the action of tungstic, silicic, and titanic oxides on potassic carbonate at a high temperature. "On a new Test for Glycerin," by Dr. Senier and Mr. Lowe. This test is founded on an observation of Iles, that borax when treated with glycerin gives to a Bunsen flame the green colour characteristic of boracic acid. By means of the test one-tenth per cent of glycerin was detected in beer after concentration, &c. "On Ammonium Triiodide," by Mr. G. S. Johnson. The author has prepared this substance by dissolving iodine to saturation in a strong aqueous solution of ammonium iodide and by stirring crystals of ammonium iodide and iodine with a small quantity of water till the resulting black liquid refused to dissolve more of either ingredient. The liquid on evaporation over sulphuric acid gave dark blue prisms of the substance in question slightly deliquescent, sp. gr. 3·749

PHYSICAL SOCIETY.

JUNE 8TH. — Prof. W. G. Adams, President, in the chair.—Mr. R. H. Solly was elected a member. The Secretary read a paper by Prof. Hughes on the physical action of the microphone. That instrument renders it possible to introduce into an electrical circuit an electrical resistance which varies in exact accord with sonorous vibrations, so as to produce an undulatory current of electricity from a constant source, whose wave-length, height, and form is an exact representation of the sonorous waves. Prof. Hughes has found that when an electrically conducting matter, in the form of powder, filings, or superposed surfaces, is put under a certain slight pressure, far less than that which would produce cohesion, and more than would allow it to be separated by sonorous vibrations, a remarkable state of things occurs, the electrical resistance being caused to vary by rearrangements as regards the form, number in contact, or pressure of the molecules. It is essential that that the instrument be so arranged as regards pressure between the touching surfaces as to be adapted to the particular vibrations employed: thus a box suitable for a man's voice is not adapted to observe the tramp of a fly. But in all cases a perfect undulatory current can be secured throughout a certain range; and, when speaking to an instrument, a galvanometer should be interposed in the circuit, and the pressure between the surfaces gradually increased from a maximum until the needle remains stationary, when a maximum of loudness will be attained; beyond this point the sounds die out gradually, until there is complete silence. Prof. Hughes then proceeded to consider the probable cause of the observed phenomena, taking as an illustration the very simplest form of instrument, two blocks held together by an insulate adjusting screw, the lower block being fixed to the board by means of which it receives the sonorous vibrations. From numerous experiments he inclines to the belief that the whole block inreases and diminishes in size at all points, both in the centre and at the sides, in accordance with the form of the sonorous wave, and that this increase in size varies the resistance by changing (1) the pressure at the surface of discontinuity, and (2) the extent of the molecular surface in contact. Of these changes he considers the latter has the greater effect, since some of his best results have been obtained by using two surfaces of solid gold, and not by such an elastic conductor as metallised silk, which would be most affected by the first-named change. Prof. Hughes is now mainly anxious to find some efficient insulator for sounds, as, until such is available, it will be impossible to isolate and study many objects which require investigation from this new point of view. Prof. Hughes himself then exhibited some of the remarkably simple appliances he has used in his investigations. Sir John Conroy, Bart., M.A., read a paper "On the Light reflected by Potassium Permanganate." Prof. S. P. Thompson exhibited and described a cheap and efficient form of optical bench. The Secretary read a paper, by Prof. Ayrton, of the Imperial College of Tokio, Japan, "On the Electrical Properties of Beeswax and Lead Chloride."

INSTITUTION OF CIVIL ENGINEERS.

MAY 28TH.—Mr. J. F. Bateman, President, in the chair —The discussion on Mr. T. C. Clarke's paper "On the Design of Iron Railway Bridges of very large Spans" was continued throughout the evening. — The monthly ballot resulted in the election of twenty-six candidates, Messrs. A. D. Austin, T. W. Horn, W. H. Lindley, H. A. F. M'Leed, T. F. Parkinson, G. E. Smith, and P. Stirling as members; and the Rev. J. O. Bevan, Messrs. W. Bentley, J. G. Blackett, J. E. Corry, C. Fowler, W. Griffiths, C. Horsley, R. Hughes, E. Lavey, E. Lee, H. C. Litchfield, J. Machie, J. M. Montague, J. C. Pottinger, H. R. L. Reincke, Michelangelo Sclaverani, J. Tunstall, J. Warren, and R. H. Willis, as Associates.

QUEKETT MICROSCOPICAL SOCIETY.

MAY 24TH.—H. Lee, Esq., President, in the chair.—Five new members were elected.—A paper by Mr. Williams, "On an Apparatus for Facilitating the use of Powell's small Bull's-eye Illuminator for the Examination of Test Objects," was read by Mr. Curties, and illustrated by diagrams and by the exhibition of the method described.—Mr. B. T. Lowe gave a description of the results of his recent investigation into the structure of the eyes of insects, as detailed in his late communication to the Royal Society. The subject was well illustrated by numerous coloured diagrams. Some further observations upon the subject were made by Mr. C. Stewart, who pointed out the analogy which seemed to exist between the iridescence observed in the eyes of many insects and the *Tapetum lucidum*, found in the eyes of the nocturnal carnivora.

PHOTOGRAPHIC SOCIETY.

MAY 14TH.—J. Glaisher, Esq., President, in the chair.—Papers were read "On Photography at the least Refrangible Phenomena," by Capt. Abney,—"On Dry-plate Processes,' by Mr. W. England,—"On a Tourist's Preservative Dry-plate Process," by Mr. T. S. Davis.—Capt. Abney exhibited a photograph he had taken of the spectrum beyond the B red line, containing 130 perfectly defined lines, many never seen before.

IRIDESCENT GLASS.

THE lustrous, metallic-looking glass, of iridescent quality, which has attracted much attention of late, is, it appears from the specification of the patent of Mr. Thomas W. Webb, produced in the following manner: Chloride of tin, or tin salt, is burnt in a furnace, and the glass having an affinity for it, when hot, receives the fumes, and so at once an iridescent surface is produced. To give greater depth to the colour or tints, nitrate of barium and strontium is used in small proportions. By this patent the glass is not re-heated, but the iridescence is produced during the manipulation of the article when in the hands of the blower, and while on the punty.

EFFECT OF GAS ON COTTON GOODS.

AT a meeting of the Chemical Section of the Philosophical Society of Glasgow, Dr. William Wallace, Gas Engineer and Public Analyst fot the city of Glasgow, read a short paper on the destruction of the colour of cotton goods by the sulphur in the gas burned in the London warehouses. Sulphuric acid, he said, was found in considerable quantity in the goods after being some time exposed, while the same articles in the fresh condition were quite free from that acid. In some cases the cotton fibre itself was rendered so tender as to be perfectly useless. The same thing had been observed in the warehouses in several large towns in England, such as Leeds, Manchester, &c., where common coal, containing much sulphur, was used as the source of the gas supplied to the consumers, but only to a limited extent. The remedy which was recommended by Dr. Wallace was the thorough ventilation of the warehouses, so as to insure that the sulphurous and sulphuric acids generated by the burning of the gas might have a sufficiently free escape into the atmosphere. He also suggested the free use of lime for whitewashing the walls of the warehouses, so that the acid vapours floating in the more or less confined air might combine with the lime. He exhibited a number of specimens of the goods which he had examined after they had been sent back by the London merchants as damaged to the manufacturers. Both in colour and in strength they were seen to have suffered detriment by exposure to gaseous fumes.

Correspondence.

COAL WASHING.

TO THE EDITOR OF THE SCIENTIFIC AND LITERARY REVIEW.

SIR,—Referring to my letter on "Coal Washing," on page 110 of current number of your journal, I find that I had accidentally misspelt one word, viz., "combing." It should be "combining." Kindly correct this in next issue, and please accept my amplest apology for the error.—I am, &c.,

J. DAVIES.

[The word was so distinctly written "combing" that, although we believed the right word to be "combining," we did not consider ourselves justified in altering it, and there was no time for communication with our correspondent.—ED. S. R.]

ART AND INDUSTRY IN LONDON.

(FROM A CORRESPONDENT.)

PAINT.—Patent indestructible paint resists the action of all alkalies and acids. It is used for iron structures, roofing, gas-tanks, &c., in fact, for all purposes where ordinary paint is useless. It is manufactured in three colours,—bronze-green, chocolate, and black; no mixing, grinding oil, or driers required, and full instructions are marked on each can. Patent enamel paint for kitchens, pantries, and basement offices successfully used instead of oil paint; and stables on brickwork of stalls where a hard and washable surface is required. Prepared flat, it is entirely free from the gritty and sand-paper feel of ordinary flat paint. As only two coats of the patent enamel paint are sufficient—the saving is a great recommendation. Patent enamel solution for the preservation of stone, bricks, cement, wood, &c., is colourless. It leaves no deposit on the surface, nor alters the appearance of the coarsest stone or whitest marble. It is urged as a scientific fact by the manufacturers that anything in the nature of a paint which should destroy or conceal the grain of stone is altogether inadmissible. Medals were awarded at the Exhibitions of 1873-4 for scientific inventions Two pieces of white marble treated on one side with solution, one shining and one invisible. Also bricks and tissue paper treated with solution. Three vases treated with solution in Portland, Bath, and Caen. The manufacturers are the Indestructible Paint Company (Limited), 97, Cannon-street and 42, Bread-street, with works at Limehouse, London. E. The paints are prepared under the direction of Mr. Henry Browning. The second paint described has been extensively used on the lamp-posts opposite the Exchange, and recently on the lamp-posts, hydrants, orderly bins, &c., in the City. It is now being used on the railings of the Thames Embankment. The ornamental railings of the Temple Gardens on the Embankment are now being coated with it. Also the Albert and Fulham Bridges, the Holborn Viaduct, St. Paul's Cathedral, Royal Dockyard, &c. Egyptian, navy, and other works have been taken in hand by the company. It can be made in any colour or tint, however delicate. It requires no mixing, being sent out ready for use. No oil, turpentine, grinding, or driers are required. As to the third, the specimens exhibited at request of Royal Engineers, placed in Royal Museum at Chatham. It has been much used in renovating St. Paul's. There is a long list of valuable testimonials in prospectus recently issued. Some of these are Clerk of Works, St. Paul's Cathedral—very extensive use; H. M. Dockyard, Chatham; Sir James Anderson, Southampton Dock Company; Sir Bruce Chichester, Hon. D. S. Fortescue, M.P., W. Haywood, Esq., City Engineer, Guildhall, and a number of influential people.

FOREIGN SCIENCE.

There has been founded a geographical society at Oran in Algeria. Certainly societies of the kind can render great services. We will cite notably the Geographical Society of Marseilles and the Geographical Society of Bordeaux, which, in a short time, acquired a just fame. They may occupy themselves with commercial geography, agricultural geography, statistics, industrial economy, &c.

Congratulations are given on the enormous and immediate success of the French Association for the Advancement of Sciences. Six annual *réunions* have already been held. The excursions have been a great point.

The French are noticing our studies as to the age of the earth. As so much French science is afforded otherwise in this number in connection with the Exhibition, we will glance at other fields.

In British Columbia the coal mines have been singularly developed, and the number and excellence of the coal is to be noted. The factories are numerous, there is a fine planing mill at Victoria, where a planing machine has been introduced, which is of unusual excellence. The gold mines still progress. The country is beautiful, and deserves the settlement of a number of superior class of English workers. There are naturally good fields for mechanical science. A very interesting study is afforded in the large handbook for 1877-78, published by the Government, which is much superior to emigration guides. We intend to return to this subject.

The extraordinary and disastrous overflow of the Tiber in 1870 has given occasion to liberal journalism to spread charges against the Pontifical Government, throwing back thereon the consequences of these natural scourges—that, having the disposal of very great capital, it was spent in useless ecclesiastical expenses without undertaking by works the stopping of the wave which caused so many ravages. M. Armelline asserts that the greatest ignorance alone has been able to make the people forget the ardour displayed by the Pontifical Government at all times to put the most efficacious means at work proposed by hydraulic science.

The exports from France to Italy under the heads of linen, cotton, and wool have largely increased. Many expostulations have, as our readers are aware, been made from English manufacturing centres as to uncertainty in regard to a change in Italian tariff. It is supposed to have prevented extensive orders from England. It cannot be said, according to the report of an English Consul, that the uncertainty is nearly removed. The difficulties which various interests, both here and abroad, fling in the path of negotiations put off the settlement from day to day, even from year to year. The exports from Italy of stones, earths, and other fossils to England rose from 6,324,000 frs. in 1871 to 11,234,000 frs. in 1875. The exports of glass and crystal wares rose from 51,000 frs. in 1871 to 994,000 frs. in 1875. Italy is beginning to consume its own supplies of raw cotton. French manufactures are more welcome in Italy than ours. England has ceased to supply linen, cotton, and wool in the same proportion as of old.

The works of the Quay Company at Smyrna, begun in 1869 by Messrs. Dussand, French subjects, who took up a concession from the Turkish Government for twenty-five years for the construction of the Smyrna Quay, with authority to levy certain dues on goods passing over the Quay, are about completed, as well as a port surrounded by a stone mole, for which they obtained a concession at a later period added to the original firman. The pavement of the streets of Smyrna and the roads, it is complained, are in the same state as they were a hundred years ago. When things are quiet, an English engineer might bring the nation to its senses in this respect.

PORTWAY'S IMPROVEMENTS IN LOOMS: MOTION FOR STOPPING WHEN A WARP THREAD BREAKS.

FROM the days of Cartwright, to whom the credit of the invention of the power-loom belongs, a variety of improvements have from time to time been introduced which have all, more or less, contributed to its efficiency and perfection. The narrative which Cartwright has supplied of the circumstances which led to his discovery contains some curious and interesting incidents. "Happening," he says, "to be at Matlock in the summer of 1784, I fell in company with some gentlemen of Manchester, when the conversation turned on Arkwright's spinning machinery. One of the company observed that, as soon as Arkwright's patent expired, so many mills would be erected, and so much cotton spun, that hands could never be found to weave it. To this observation I replied that Arkwright must then set his wits to work and invent a weaving mill. This brought on a conversation on the subject in which the Manchester gentlemen unanimously agreed that the thing was impracticable; and, in defence of their opinion, they adduced arguments which I certainly was incompetent to answer, or even to comprehend, being totally ignorant of the subject, having never at that time seen a person weave. I controverted, however, the impracticability of the thing, by remarking that there had lately been exhibited in London an automaton figure which played at chess.

"Some little time afterwards a particular circumstance recalling this conversation to my mind, it struck me that, as in plain weaving, according to the conception I then had of the business, there could only be three movements, which were to follow each other in succession, there would be little difficulty in producing and repeating them. Full of these ideas I immediately employed a carpenter and smith to carry them into effect. As soon as the machine was finished, I got a weaver to put in the warp, which was of such materials as sail-cloth is usually made of. To my great delight a piece of cloth, such as it was, was the produce. As I had never before turned my thoughts to anything mechanical, either in theory or practice, nor had ever seen a loom at work, or knew anything of its construction, it will readily be supposed that my first loom must have been a most rude piece of machinery. The warp was placed perpendicularly, the reed fell with a force of at least half-a-hundredweight, and the springs which threw the shuttle were strong enough to have thrown a congreve rocket. In short, it required the strength of two powerful men to work the machine at a slow rate, and only for a short time. Conceiving in my simplicity that I had accomplished all that was required, I then secured what I thought a most valuable property by a patent, 4th April, 1785. I then condescended to see how other people wove; and guess my astonishment when I compared their easy mode of operation with mine. Availing myself, however, of what I then saw, I made a loom, in its general principles nearly as they are now made; but it was not till the year 1787 that I completed my invention, and took out my last weaving patent."

During the century which has since elapsed many valuable changes have taken place in the construction of the loom, and amongst the recent improvements which have been introduced, our attention has been directed to one which appears likely to answer an important purpose, and to meet a want which has long been felt. It is an arrangement for stopping the loom automatically as soon as the thread is broken. T stop motion by which this is effected is o two kinds, one is mechanical, and the other is accomplished by electricity, and both are characterised by great simplicity and effi ciency. The mechanical motion is self-adjusting and works with perfect accuracy. The other, which is distinguished by a novel application of electricity, requires no extra attention, and at a cost of about £10 can be made to act upon 1,000 looms at the same time. This motion for stopping the loom is effected by means of a magnetic machine, worked by a belt from the shafting, and requiring no scientific knowledge whatever on the part of the workpeople. Thin wire healds, perfect in the eye, easy to separate in taking up an end, and always keeping their shape, are employed, and are so made as to obviate the objections usually hitherto taken against this class of healds.

These healds are set in a wooden frame or shaft, and are threaded on two metal rods, passing through loops at the top and bottom of the healds, the loops being made half an inch longer than the width of the rods to allow them to work up and down. When the shaft is at the bottom of its "tread," the warp by tension will naturally bring the healds so that the bottom of their lower loops will be against the bottom rod. But should an end be broken its corresponding heald will be hanging from the top rod, and will at the bottom rod be below the range of the other healds, and by that means will be brought into contact with two hinged plates set along the foot of the wooden shaft, which plates are charged with electricity. The electricity is introduced in the following manner, viz.:—A bar insulated in wood from the frame of the loom is attached thereto on one side by means of a small casting placed in such a position that the top rod on which the healds are threaded by being prolonged at one end, beyond and through the frame of the shaft shall touch it when the shaft is at the bottom of its "tread." This insulated rod is connected by means of a wire, with one of the poles of a magnetic machine thus charging, at the moment of contact, the top rod in the shaft. To the other side of the loom another insulated bar is attached with an arrangement corresponding to that already described on the opposite side, and working in like manner at the same time as the top rod touches the first mentioned insulated bar. This second bar is joined by a wire to one pole of a magnetic coil, the other pole of the magnetic coil being in connection by means of a wire with the opposite pole of the magnetic machine. Thus the rod at the top and the plates at the bottom of the shaft are both for the moment charged.

The magnetic coil is placed close to the "knocker-off" of the loom, and immediately beneath it is a small plate working on a pivot, at the other end of which is a small piece of solid metal. As soon as a warp thread breaks and its heald falls as before described, uniting the top rod in the shaft with the plates at the bottom, the electric current is complete, and the magnetic coil becomes a magnet and attracts to itself the small plate mentioned as being beneath it, and working on a pivot, causing the piece of solid metal to take a position in front of the "knocker-off," and obtruding itself between the "knocker-off" and a buffer piece attached to the stay-board so that the next stroke of the latter shall throw the loom out of gear.

The following are the advantages which appear to be justly claimed for this invention, viz., that by arresting the action of the loom immediately that a thread in the warp becomes fractured, the fault of "broken threads," or "ends down" in piece goods is entirely done away with. "Slack ends" are also prevented by the stoppage of the loom as soon as one appears. The saving of waste of weft and of lost time occasioned by the weavers pulling back when a thread of warp has run down any distance is an important consideration. The common fault of "floats" is also obviated. With this motion attached weavers should be able to attend to a larger number of looms than has hitherto been possible, so that on the score of economy the invention is deserving of careful attention, and from what we have seen of it we feel confident that, as its merits are examined and understood, it will be appreciated as a valuable improvement.

We have extracted the above from that ably-conducted trade journal, *Cotton*, feeling that this invention deserves all the publicity that can be given to it.

RECENT AMERICAN AND FOREIGN PATENTS.

A convenient clasp for pocket-books, patented by Mr. Louis Prahar, of New York city, is so constructed that it may be put together after being plated, without danger of marring the plating, and which, it is claimed, cannot be detached accidentally.

Mr. N. Fox, of Savannah, Ga., has patented an improved bottle stopper, especially for effervescent liquids, which permits the bottle to be closed before removal from the filling machine. The principal parts are a collar, secured to the bottle neck, a cap which screws down upon the collar, operating a ball valve, and a suitable nozzle.

Mr. G. W. Everett, of New York city, has patented a skirt holder for dry goods stores, &c., which may be conveniently folded into a narrow space for being packed in a trunk or otherwise stored away.

An improved clothes pin, patented by Messrs. H. L. Clark and A. B. Smith, of Chester, N.Y., is formed by the combination with a straight-shanked hook having a thumbpiece and stop, of a spiral spring and follower, the latter having two fingers which engage with the hook.

An improved child's carriage, invented by Mr. C. Gillis, of Brooklyn, N.Y., has a flexible body, like a hammock, and the frame is so arranged as to fold into a small compass for carrying upstairs, or may be readily taken to pieces for transportation.

Mr. Henry Holcomb, of Painesville, Ohio, has invented an improved hot-air furnace, which is provided with automatic means for regulating the admission of cold into the fire-chamber, and which embodies a number of novel details.

A new harness pad, recently patented, is claimed to rest easily upon the horse's back and not press upon the spine. The tree is a flat bar of wrought iron having end loops for receiving the trace-supporting traps, and having ears on each edge for receiving the pad-fastening screws; and the pads are wooden blocks covered with several thicknesses of cloth or felt and leather. The inventor is Mr. L. W. Vandenburg, of Honesdale, Pa.

An amusing mechanical toy, recently patented, may be said to convey a moral. It is called "the careless engineer," and illustrates by a harmless clockwork explosion the danger of an engineer's carelessness. It may also be set so as to run without accident, showing the safety which results from proper care. This is the idea of Mr. Stacy Potts, of Philadelphia, Pa.

An improved knife scourer, patented by Mr. N. A. Wierman, of Bendersville, Pa., is claimed to be made much more durable than is usual by making the scouring rubbers detachable, so as to present a fresh face from time to time, and by applying the pressure at the middle of the rubbers, at the point where the most wear occurs, so as to hold them to their work even when considerably worn.

Mr. E. T. Rogers, of New York city, has invented a filter intended for the feed water of steam engine boilers and similar uses. It has a vertical breakwater plate and one or more vertical screens at the inlet end, and similar vertical screens at the outlet end, with a central charcoal chamber, and under it a sediment receptacle.

An improved rocking chair of the class having a stationary base and spring connected rocking seat, which has lately become so popular, has been invented by Mr. M. Schrenkeisen, of New York city. The interposition of rubber blocks prevents jar as the chair reaches the end of its forward or backward movement, and there are other improvements.

Mr. William H. Sutton, of Purdy, Tenn., has invented an improved nut lock for the nuts of fish-plate bolts, to prevent them from working loose. It is formed of two strips of sheet metal slitted longitudinally and transversely, having the flaps thus formed bent outward at right angles to make flanges which rest against the sides of the nuts, having hook tongues at the outer ends to hook upon the ends of the fish-plate, and having a tongue formed upon the inner end of one strip to hook into the inner end of the slot in the other strip.

Mr. E. A. F. Toepperwein, of Boerne, Tex., has invented an adjustable gun hammer, carrying a swivelling striker, with locking devices, so arranged that the same hammer may be used with both barrels of a double gun; the striker being capable of such adjustment as to bring it within it the range of either nipple, or into an intermediate position between the two for the prevention of accidents. The hammer may be used also with a single gun, or with one having more than two barrels.

Mr. John Conrath, of Salamanca, N.Y., has patented an apparatus for drying and stretching curtains, arranged to keep the curtain under tension by its own weight while drying, and capable of being compactly unfolded when not in use.

A lock for stovepipe joints, designed to keep the lengths from coming apart and the line of pipe from sagging, has been patented by Mr. J. W. Woolsey, of Henderson, Minn. A metallic strip riveted to one length passes through a slit in a corresponding strip attached to the other length, and is bent upon itself, forming a secure tie.

Mr. S. P. Cox, of Brooklyn, N.Y., has patented an improved form of bracelet made of stone, jet, or other material, but especially of stone. It consists in a series of blocks or plates strung upon spring wires, having sufficient elasticity to hold the bracelet upon the arm when the edges of the bracelet are brought together and secured by a fastening similar to a butt hinge. The same inventor has also designed a locket, so constructed that no metal is visible except the eye or loop to receive the guard.

A new fire escape, the invention of Mr. J. S. Shaw, of Joplin, Mo., consists of a folding ladder, made of links and rounds bent of one piece of wire, which is stowed compactly in the hollow sill of a window and suitably secured at its upper end, and is always ready for use.

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